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**The use of moored inverted echosounders for monitoring
near-surface processes**

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The near-surface ocean is a difficult place to conduct measurements of physical and biological processes. High-frequency inverted echo-sounders (IES), moored a short distance below the surface, provide a simple means for sustained, high-resolution monitoring. In particular, long duration deployments are useful in capturing transient events, such as storms or solitary wave trains, and placing their occurrence within the context of longer term trends. Lessons learned from use of these moored IES systems can be applied to modern ocean observatories. A number of long duration deployments of a self-contained 200kHz IES were made in the late 1990's. Three specific examples will be discussed. Firstly, an investigation of calibrated volume scattering from near-surface bubbles in the NE Pacific Ocean showed the frequent occurrence of vertical, plume-like structures drawn downwards up to 25 m. Within the plumes, the backscatter cross-section exhibited an exponential decay with depth, with e-folding scale in the range 0.5 to 2.5 m. Secondly, imaging of near-surface internal solitary waves was performed from a mooring near the Oregon coast, supplementing measurements made with nearby temperature sensors. These measurements showed some suggestion of scattering by turbulence. Thirdly, through the use of both backscatter intensity and echo statistics, a moored IES demonstrated quantitative monitoring of migratory zooplankton and fish populations.